

Section 1: Chemical Product and Company Identification



Company Identification: Engro Polymer & Chemicals Ltd.

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Emergency Telephone Number: (+92) 21-111-411-411

Product Identifier: CAUSTIC SODA LIQUID (ALL GRADES)

Trade Name: Caustic Soda

Synonyms: Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye, Secondary Caustic Soda Liquids

Product Use: Pulp Industry, Metal finishing, Cleaner, Process chemical, Petroleum Industry

Uses Advised Against: None identified

Section 2: Hazard Identification

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

EMERGENCY OVERVIEW:

Color: Colorless to slightly colored

Physical State: Liquid

Appearance: Clear to opaque

Odor: Odorless

Signal Word: DANGER

MAJOR HEALTH HAZARDS: CORROSIVE. CAUSES SERIOUS EYE DAMAGE. CAUSES SEVERE SKIN BURNS AND EYE DAMAGE. MAY CAUSE RESPIRATORY IRRITATION. EFFECTS OF CONTACT OR INHALATION MAY BE DELAYED.

PHYSICAL HAZARDS: MAY BE CORROSIVE TO METALS. Mixing with water, acid or incompatible materials may cause splattering and release of heat. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated.

ECOLOGICAL HAZARDS: This material has exhibited moderate toxicity to aquatic organisms. Keep out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters.

PRECAUTIONARY STATEMENTS: Do not get in eyes, on skin, or on clothing. Wear eye protection, face protection, protective gloves. Do not breathe mist, vapors, or spray. Do not ingest. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling- exposure can cause burns which are not immediately painful or visible.

ADDITIONAL HAZARD INFORMATION: This material is corrosive. It may cause severe burns and permanent damage to any tissue with which it comes into contact. Toxicity may be delayed, and may not be readily visible. To treat contacted tissue, flush with water to dilute. There is no specific antidote. Significant exposures must be referred for medical attention immediately.

GHS CLASSIFICATION:

GHS: PHYSICAL HAZARDS: Corrosive to Metals

Mixing with water may cause splattering and release of heat

GHS: CONTACT HAZARD - SKIN: Category 1B - Causes severe skin burns and eye damage

GHS: CONTACT HAZARD - EYE: Category 1 - Causes serious eye damage

GHS: TARGET ORGAN TOXICITY (SINGLE): Category 3 - May cause respiratory

EXPOSURE):

HAZARDOUS TO AQUATIC ENVIRONMENT - ACUTE

HAZARD:

Category 3 - Harmful to aquatic life

UNKNOWN ACUTE TOXICITY: 100% of the mixture consists of ingredient(s) of unknown toxicity. There is no acute toxicity data available for this product.

GHS SYMBOL: Corrosive



GHS SIGNAL WORD: DANGER

GHS HAZARD STATEMENTS:

GHS - Physical Hazard Statement(s)

- May be corrosive to metals

GHS - Health Hazard Statement(s)

- Causes serious eye damage
- Causes severe skin burns and eye damage
- May cause respiratory irritation

GHS - Precautionary Statement(s) - Prevention

- Do not breathe mist, vapors, or spray
- Wear protective gloves, protective clothing, eye, and face protection
- Wash thoroughly after handling
- Keep only in original container
- Use only outdoors or in a well-ventilated area

GHS - Precautionary Statement(s) - Response

- IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower
- Wash contaminated clothing before reuse
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing

- Immediately call a POISON CENTER or doctor/physician
- IF INHALED: Remove person to fresh air and keep comfortable for breathing
- Immediately call a POISON CENTER or doctor/physician
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
- Specific treatment (see First Aid information on product label and/or Section 4 of the SDS)
- Absorb spillage to prevent material damage

GHS - Precautionary Statement(s) - Storage

- Store locked up
- Store in a well-ventilated place. Keep container tightly closed
- Store in corrosive resistant and NON-ALUMINUM container with a resistant inner liner (NOTE: flammable hydrogen gas may be generated if aluminum container and/or aluminum fittings are used)

Section 3: Composition and Information on Ingredients

Synonyms: Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye, Secondary Caustic Soda Liquids

Component	Percent [%]	CAS Number
Sodium Hydroxide	5.5 - 51.5	1310-73-2

Section 4: First Aid Measures

INHALATION: If inhalation of mists, vapors, or spray occurs and adverse effects result, remove to uncontaminated area. Evaluate ABC's (is Airway constricted, is Breathing occurring, and is blood Circulating) and treat Symptomatically. GET MEDICAL ATTENTION IMMEDIATELY. There is no specific antidote, treat symptomatically.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and Shoes immediately. Wash contaminated areas with large amounts of water. GET MEDICAL ATTENTION IMMEDIATELY. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods.

EYE CONTACT: Immediately flush contaminated eyes with a directed stream of water for as long as possible. Remove contact lenses, if present and easy to do. Continue rinsing. GET MEDICAL ATTENTION IMMEDIATELY. Washing eyes within several seconds is essential to achieve maximum effectiveness.

INGESTION: If swallowed, do not induce vomiting. For definite or probable ingestion, do not administer oral fluids. If vomiting occurs spontaneously, keep airway clear. Monitor airway. Volume resuscitation (IV fluids) and circulatory support (CPR) may be required. Never give anything by mouth to an unconscious or convulsive person. GET MEDICAL ATTENTION IMMEDIATELY.

Most Important Symptoms/Effects (Acute and Delayed):

Acute Symptoms/Effects: Inhalation (Breathing): Respiratory System Effects: Exposure to airborne material may cause irritation, redness of upper and lower airways, coughing, laryngospasm, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. Pulmonary edema may develop several hours after a severe acute exposure. Aspiration of this material may cause the same conditions. Skin: Skin Corrosion. Exposure to skin may cause redness, itching, irritation, swelling, burns (first, second, or third degree), liquefaction of skin, and damage to underlying tissues (deep and painful wounds). Eye: Serious Eye Damage. Eye exposures may cause eye lid burns, conjunctivitis, corneal edema, corneal burn, corneal perforation, damage to internal contents of the eye, permanent visual defects, and blindness and/or loss of the eye. Ingestion (Swallowing): Gastrointestinal System Effects: Exposure by ingestion may cause irritation, swelling, and perforation of upper and lower gastrointestinal tissues. Permanent scarring may occur

Delayed Symptoms/Effects: Skin: Repeated and prolonged skin contact may cause a chronic dermatitis. Interaction with Other Chemicals Which Enhance Toxicity: None known. Medical Conditions Aggravated by Exposure: May aggravate preexisting conditions such as: eye disorders that decrease tear production or have reduced integrity of the eye; skin disorders that compromise the integrity of the skin; and respiratory conditions including asthma and other breathing disorders. Protection of First-Aiders: Protect yourself by avoiding contact with this material. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Do not ingest. Use personal protective equipment. Refer to Section 8 for specific personal protective equipment recommendations. At minimum, treating personnel should utilize PPE sufficient for prevention of blood borne pathogen transmission. Notes to Physician: Medical observation and assessment is recommended for all ingestions, all eye exposures, and symptomatic inhalation and dermal exposures. For symptomatic ingestion, do not administer oral fluids and consider investigation by endoscopy, X-ray, or CT scan. Esophageal perforation, airway compromise, hypotension, and shock are possible. For prolonged exposures and significant exposures, consider delayed injury to exposed tissues. There is no antidote. Treatment is supportive care. Follow normal parameters for airway, breathing, and circulation. Surgical intervention may be required.

Section 5: Fire and Explosion Data

Fire Hazard: Non-combustible, substance itself does not burn but may decompose upon heating to produce Corrosive and/or toxic fumes. May react with chemically reactive metals such as aluminum, zinc, magnesium, copper, etc. to release hydrogen gas which can form explosive mixtures in air.

Extinguishing Media: Use extinguishing agents appropriate for surrounding fire

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water. Do not apply water directly on this product. Heat is generated when mixed with water. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Avoid contact with skin.

Component Immediately Dangerous to Life/ Health (IDLH)

Sodium Hydroxide :10 mg/m³ IDLH

Hazardous Combustion Products: Sodium hydroxide fumes can be generated by thermal decomposition at elevated temperatures Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Lower Flammability Level (air): Not flammable

Upper Flammability Level (air): Not flammable

Flash point: Not flammable

Auto-ignition Temperature: Not applicable

GHS: PHYSICAL HAZARDS: -

Corrosive to Metals

Mixing with water may cause splattering and release of heat.

Section 6: Accidental Release Measures

Personal Precautions:

Do not get in eyes, on skin or on clothing. Avoid breathing mist, vapor, or spray. Do not ingest. Wear appropriate Personal protective equipment recommended in Section 8 of the SDS.

Environmental Precautions:

Keep out of water supplies and sewers. Do not flush into surface water or sanitary sewer system. This material is Alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies.

Methods and Materials for Containment and Cleaning Up:

In case of spill or leak, stop the leak as soon as possible, if safe to do so. Completely contain spilled materials with dikes, sandbags, etc. Shovel dry material into suitable container. Liquid material may be removed with a vacuum truck. Remaining material may be diluted with water and neutralized with dilute acid, then absorbed and collected. Flush spill area with water, if appropriate.

Section 7: Handling and Storage

Precautions for Safe Handling:

Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not ingest. Do not eat, drink or smoke in areas where this material is used. Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the SDS. NEVER add water to product. When mixing, slowly add to water to minimize heat generation and splattering.

Safe Storage Conditions:

Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).

Incompatibilities/ Materials to Avoid:

Acids and halogenated compounds, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or

other alkali sensitive metals or alloys, Releases heat when diluted in water

GHS: PHYSICAL HAZARDS:

- Corrosive to Metals
- Mixing with water may cause splattering and release of heat

Section 8: Exposure Controls/Personal Protection

Regulatory Exposure Limit(s): Listed below for the product components that have regulatory occupational Exposure limits (OEL's). Component OSHA Final PEL

Component
OSHA Final PEL TWA 2 mg/m3

Eye Protection: Wear chemical safety goggles with a face shield to protect against eye and skin contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear protective clothing to minimize skin contact. Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Always place pants legs over boots. Contaminated clothing should be removed, then discarded or laundered. Discard contaminated leather goods.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types:

Natural rubber, Neoprene, Nitrile, Polyvinyl chloride (PVC)

Respiratory Protection: A NIOSH approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when Symptoms have been observed that are indicative of overexposure. If eye irritation occurs, a full face style mask should be used. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever Workplace conditions warrant use of a respirator.

Section 9: Physical and Chemical Properties

Physical State: Liquid

Appearance: Clear to opaque

Color: Colorless to slightly colored

Odor: Odorless

Odor Threshold [ppm]: No data available. Molecular Weight: 40.01

Molecular Formula: NaOH

Decomposition Temperature: No data available

Boiling Point/Range: 215 - 291°F (102 - 144°C)

Freezing Point/Range: -26 to 59°F (-32 to 15 °C). Vapor Pressure: 13 - 135 mmHg @ 60 °C

Vapor Density (air=1): No data available

Relative Density/Specific Gravity (water=1): 1.05–1.56@ 15.6°C

Density: 8.8 - 13.0 lbs./gal @ 15.6 °C

Water Solubility: 100%

pH: 14.0 (theoretical value of 7.5% solution)

Volatility: No data available

Evaporation Rate (ether=1): No data available

Partition Coefficient No data available

n-octanol/water):
Flash point: Not flammable
Flammability (solid, gas): Not flammable
Lower Flammability Level (air): Not flammable
Upper Flammability Level (air): Not flammable
Auto-ignition Temperature: Not applicable
Viscosity: About 24cp for 50% solution at 40 °C (104 °F)

Section 10: Stability and Reactivity Data

Chemical Stability: Stable at normal temperatures and pressures.

Reactivity: Soluble in water, releasing heat sufficient to ignite combustibles. Reacts with metals, and may form hydrogen gas.

Possibility of Hazardous Reactions: Mixing with water, acid, or incompatible materials may cause splattering and release of large amounts of heat. Will react with some metals forming flammable hydrogen gas. Carbon monoxide gas may form upon contact with reducing sugars, food and beverage products in enclosed spaces. Conditions to Avoid: (e.g., static discharge, shock, or vibration) -. None known.

Incompatibilities/ Materials to Avoid: Acids and halogenated compounds, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys, Releases heat when diluted in water. Hazardous Decomposition Products: Toxic fumes of sodium oxide. Hazardous Polymerization: Will not occur.

Section 11: Toxicological Information

IRRITATION DATA: PRIMARY SKIN IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)

PRIMARY EYE IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)

TOXICITY DATA:

PRODUCT TOXICITY DATA: CAUSTIC SODA LIQUID (ALL GRADES)

COMPONENT TOXICITY DATA:

LD50 Oral:

No reliable data available

LD50 Dermal:

No reliable data available

LC50 Inhalation:

No data available

Note: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

POTENTIAL HEALTH EFFECTS:

Eye contact: Corrosive. Causes serious eye damage which can result in: severe irritation, pain and burns, and permanent damage including blindness.

Skin contact: Corrosive. Causes severe skin burns. Prolonged or repeat skin exposures can result in dermatitis.

Inhalation: Corrosive. Inhalation injury may result from ingestion and/or aspiration of this material. May cause severe irritation of the respiratory tract with potential airway compromise, coughing, choking, pain, and burns of the mucous membrane and respiratory system. This material can be extremely destructive to the tissue of the mucus membranes and respiratory system. Aspiration may cause chemical pneumonitis, pulmonary edema, damage to lung tissue, death.

Ingestion: Corrosive. If swallowed, may cause severe oral and esophageal, mucus membrane, and gastrointestinal burns and possible perforation. If swallowed, may pose a lung aspiration hazard during vomiting.

Chronic Effects: Repeated or prolonged skin contact may result in dermatitis.

SIGNS AND SYMPTOMS OF EXPOSURE:

This material may cause severe burns and permanent damage to any tissue with which it comes into contact. It can cause serious burns and extensive tissue destruction resulting in liquefaction, necrosis and/or perforation. Signs and symptoms of exposure vary, and are dependent on the route of exposure, degree of exposure, and duration of

exposure.

Inhalation (Breathing): Respiratory System Effects: Exposure to airborne material may cause irritation, redness of upper and lower airways, coughing, laryngeospasm, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. Pulmonary edema may develop several hours after a severe acute exposure. Aspiration of this material may cause the same conditions.

Skin: Skin Corrosion. Exposure to skin may cause redness, itching, irritation, swelling, burns (first, second, or third degree), liquefaction of skin, and damage to underlying tissues (deep and painful wounds).

Eye: Serious Eye Damage. Eye exposures may cause eye lid burns, conjunctivitis, corneal edema, corneal burn, corneal perforation, damage to internal contents of the eye, permanent visual defects, and blindness and/or loss of the eye.

Ingestion (Swallowing): Gastrointestinal System Effects: Exposure by ingestion may cause irritation, swelling, and perforation of upper and lower gastrointestinal tissues. Permanent scarring may occur.

TOXICITY:

When in solution, this material will affect all tissues with which it comes in contact. The severity of the tissue damage is a function of its concentration, the length of tissue contact time, and local tissue conditions. After exposure there may be a time delay before irritation and other effects occur. This material is a strong irritant and is corrosive to the skin, eyes, and mucus membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

GHS HEALTH HAZARDS:

GHS: CONTACT HAZARD - EYE: Category 1 - Causes serious eye damage

Skin Absorbent / Dermal Route? No.

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure): Category 3 - Respiratory Irritation

Section 12: Ecological Information

ECOTOXICITY DATA:

Aquatic Toxicity:

This material has exhibited moderate toxicity to aquatic organisms.

Data provided are for sodium hydroxide

Invertebrate Toxicity:

EC50 Daphnia magna: 100 ppm

EC50 Shrimp: 33 - 100 ppm/48 hr.

EC50 Cockle: 330 - 1000 ppm/48 hr.

HALF LIFE		
Hazardous Chemicals	Air	Water
NaOH	13 Sec	NA

FATE AND TRANSPORT:

BIODEGRADATION: This material is inorganic and not subject to biodegradation.

PERSISTENCE: This material is alkaline and may raise the pH of surface waters with low buffering capacity. This material is believed to exist in the disassociated state in the environment.

BIOCONCENTRATION: This material is not expected to bio concentrate in organisms.

BIOACCUMULATIVE POTENTIAL: Does not bio accumulate.

MOBILITY IN SOIL: No data available.

ADDITIONAL ECOLOGICAL INFORMATION: This material has exhibited slight toxicity to terrestrial organisms. This material has exhibited moderate toxicity to aquatic organisms

Section 13: Disposal Considerations

Waste from material:

Reuse or reprocess, if possible. May be subject to disposal regulations. Dispose in accordance with all applicable Regulations.

Container Management:

Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container reinstated must be disposed of in compliance with applicable regulations

Section 14: Transport Information

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:

UN NUMBER: UN1824

PROPER SHIPPING NAME: Sodium Hydroxide Solution

HAZARD CLASS/ DIVISION: 8

PACKING GROUP: II

LABELING REQUIREMENTS: 8

RQ (lbs): RQ 1000 lbs. (Sodium Hydroxide)

TRANSPORTATION OF DANGEROUS GOODS:

UN NUMBER: UN1824

SHIPPING NAME: Sodium hydroxide solution

CLASS OR DIVISION: 8

PACKING/RISK GROUP: II

LABELING REQUIREMENTS: 8

MARITIME TRANSPORT (IMO / IMDG) :

UN NUMBER: UN1824

PROPER SHIPPING NAME: Sodium hydroxide solution

HAZARD CLASS / DIVISION: 8

Packing Group: II

LABELING REQUIREMENTS: 8

Section 15: Other Regulatory Information

OSHA REGULATORY STATUS:

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Pakistan Environmental Protection Act, 1997 and rules & regulation made thereunder, including in particular the Hazardous Substance Rules 2014.

Section 16: Other Information



Prepared by : Engro Polymer & Chemicals Ltd

Health Rating: 3 Flammability: 0 Reactivity Rating: 1

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